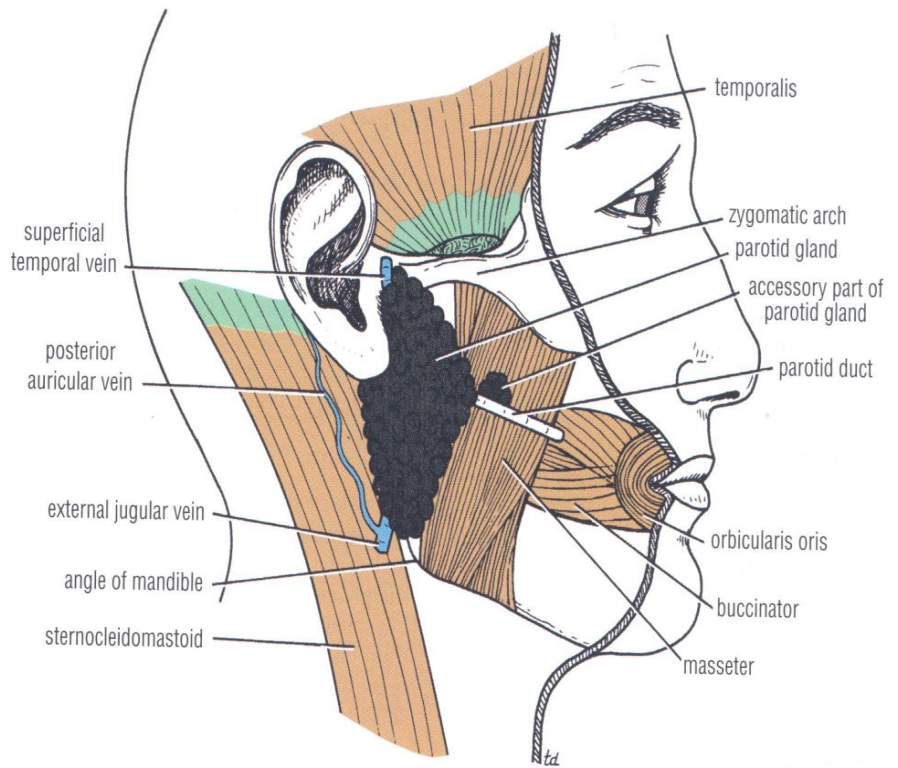
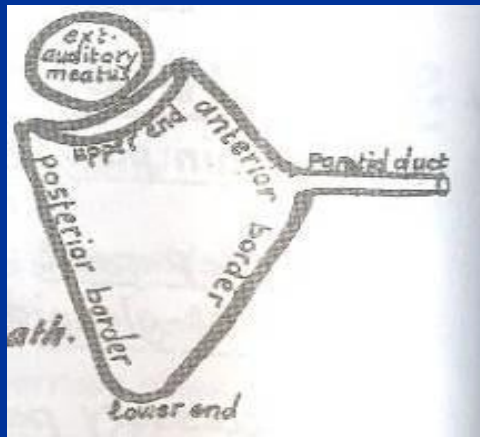


**Anatomy & innervations of
parotid, Submandibular
& Sublingual Glands**

parotid gland

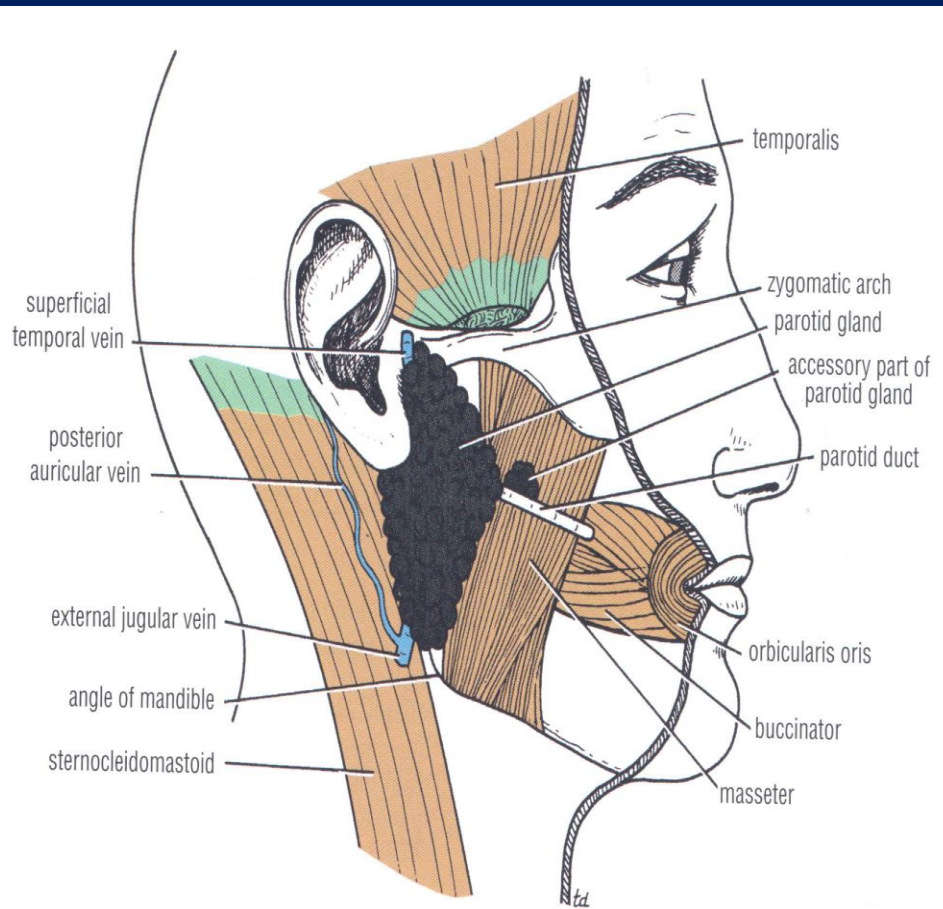


- It is the largest salivary gland (serous).
- It is located in a deep space **behind** ramus of mandible & **in front of** sternocleidomastoid.
- It is wedge shaped , with its **base (concave upper end)** lies above and related to cartilaginous part of external acoustic meatus/ and its **apex (lower end)** lies below & behind angle of mandible.



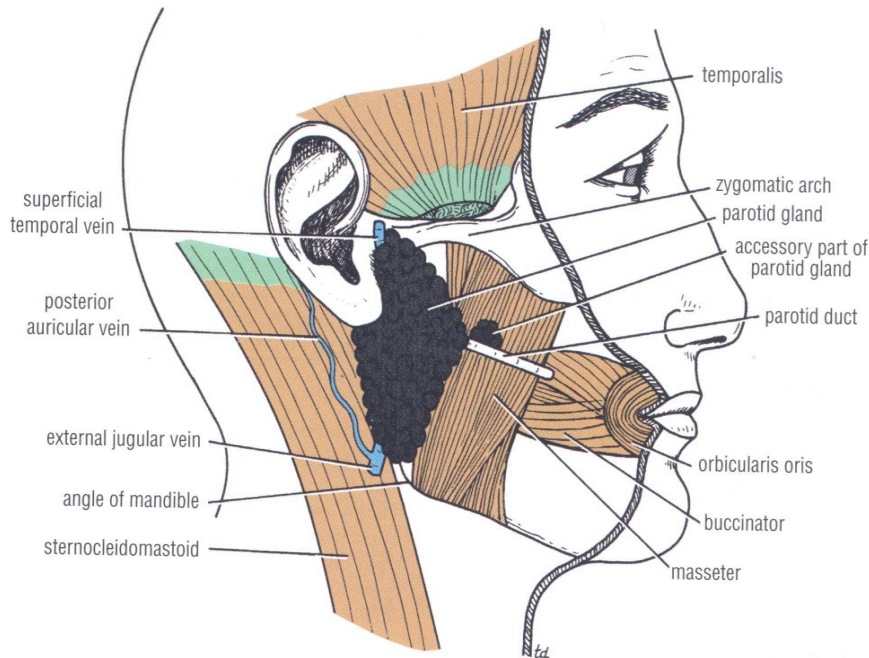
- **It has 2 borders** : anterior convex border + straight posterior border.
- **Facial N.** passes within the gland and divides it into **superficial** & **deep** parts or lobes.

Processes of the parotid gland :



- **It has 4 processes.**
- Superior margin of the gland extends upward behind temporo-mandibular joint into mandibular fossa of skull **Glenoid process.**
- Anterior margin of the gland extends forward superficial to masseter ... **facial process.**
- A small part of facial process may be separate from main gland... **accessory part of gland**, that lies superficial to masseter.
- Deep part of gland may extend between medial pterygoid & ramus of mandible ... **pterygoid process.**

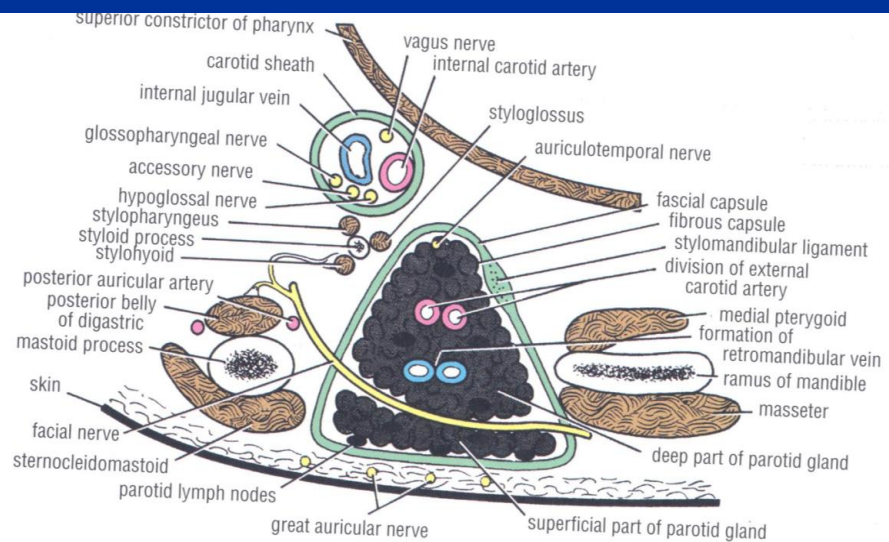
Capsules of the Gland & Parotid Duct :



➤ It is surrounded by **2 capsules**, **the first** is C.T. capsule, **the second** is the dense fascial capsule of investing layer of deep cervical fascia, (part of it is thickened to form stylomandibular ligament).

➤ **Parotid duct** 5 cm long, passes from anterior border of gland, **superficial to masseter** one fingerbreadth, below zygomatic arch, then **it pierces** buccal pad of fat & buccinator muscle.

➤ It passes obliquely between buccinator & m.m. of mouth (serves as valvelike mechanism to prevent inflation of duct during violent blowing) and finally **opens into** vestibule of mouth, opposite **upper 2nd molar tooth**



• Structures within the parotid gland

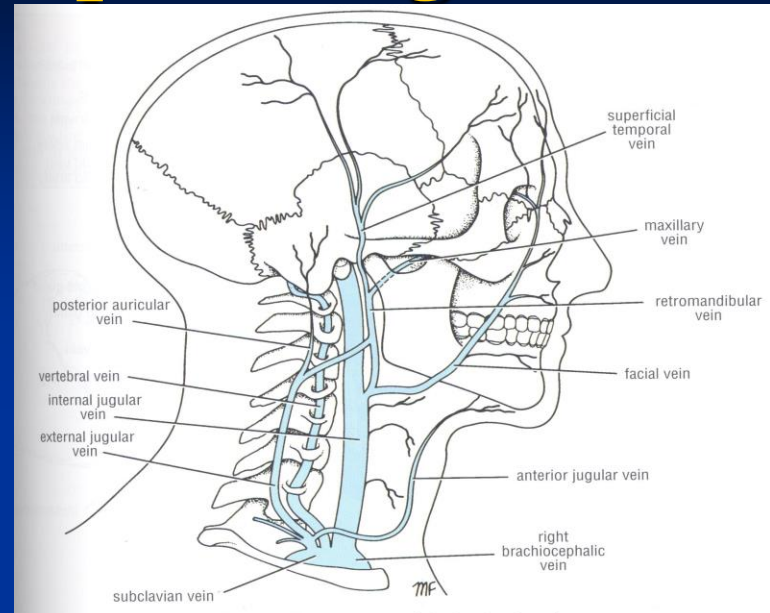
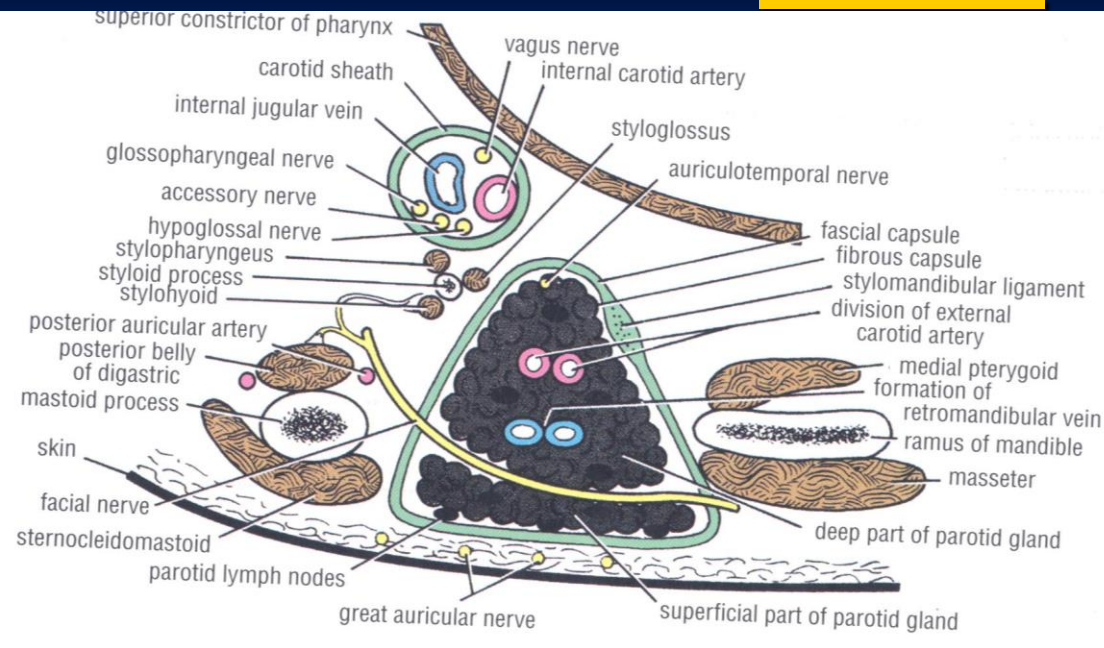
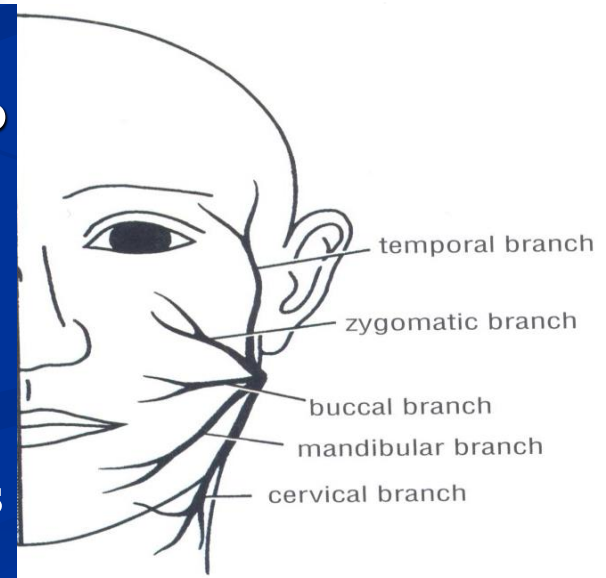


Figure 11-13 Main veins of the head and neck.

From lateral to medial (horizontal section) :

- 1-Facial N.-----** emerges from stylomastoid foramen to enter the gland at its posteromedial surface, and divides into 5 terminal branches.
- 2-Retromandibular vein:** is formed within the gland by Union of superf. temporal + maxillary veins.
- 3-External carotid artery** and its 2-terminal branches
- 4-parotid group of lymph nodes.**



• Structures within the parotid gland

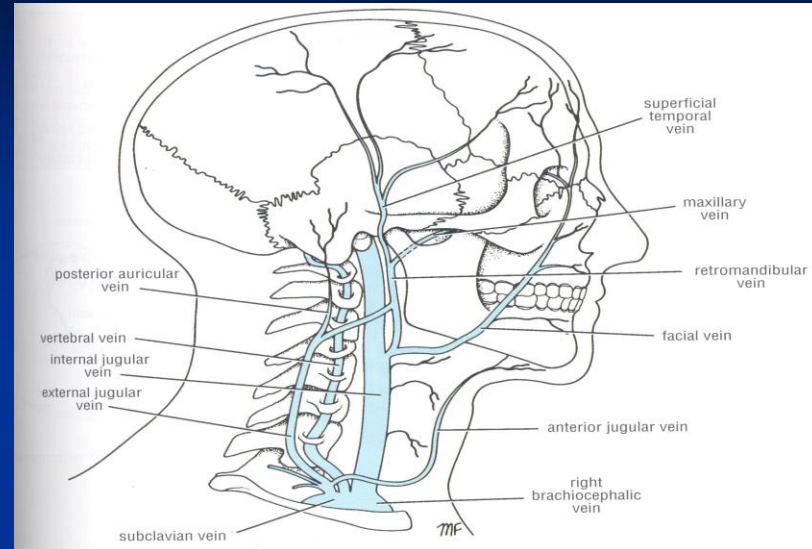
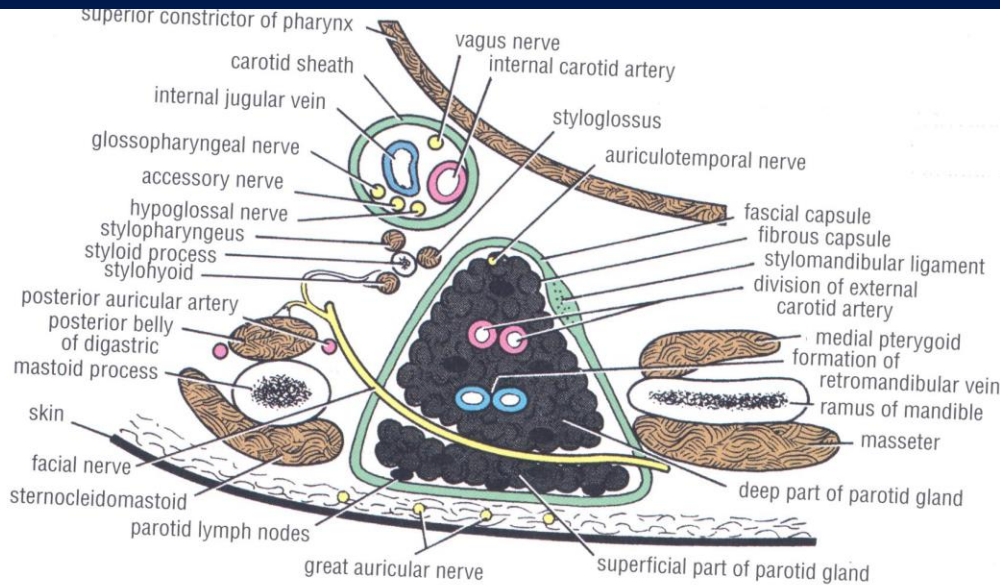
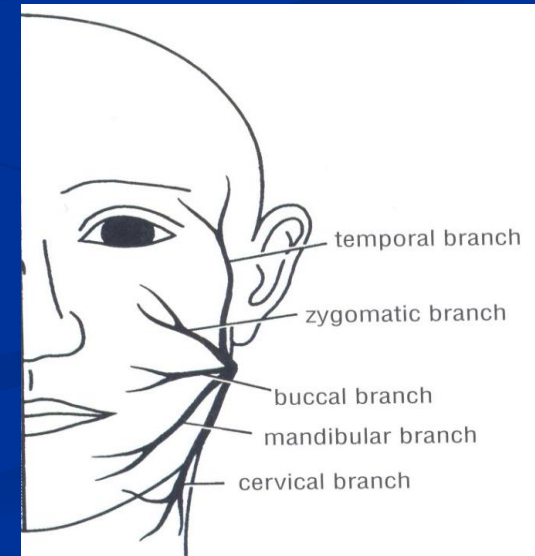


Figure 11-13 Main veins of the head and neck.

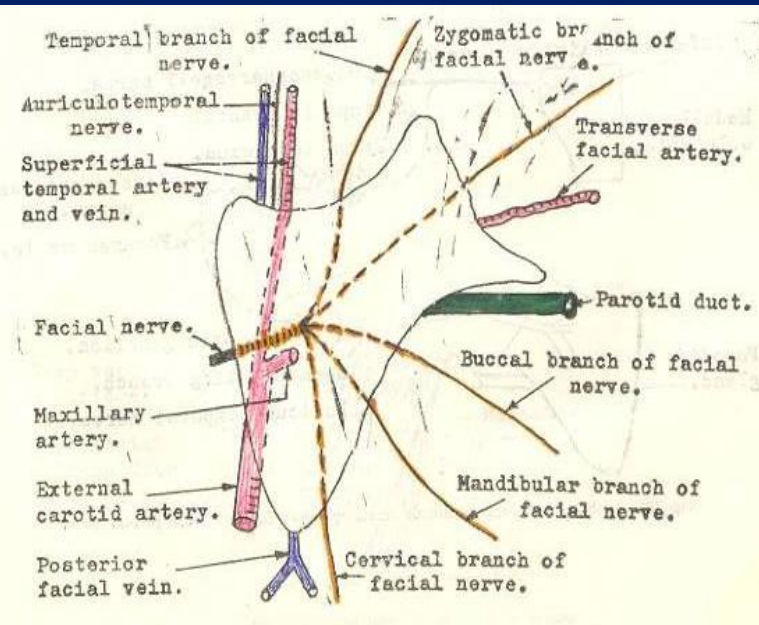
1-Facial N.----divides into 5 terminal branches, which leave anteromedial surface of the gland.

2-Retromandibular vein: it leaves lower end of the gland. It divides into anterior & posterior divisions. The ant.division joins facial v., / and the post. division joins the post.auricular v. to form ext.J.V.

3-External carotid artery : it divides into superficial temporal & maxillary arteries at neck of mandible, which they leave upper end & anteriomedial surface of gland.

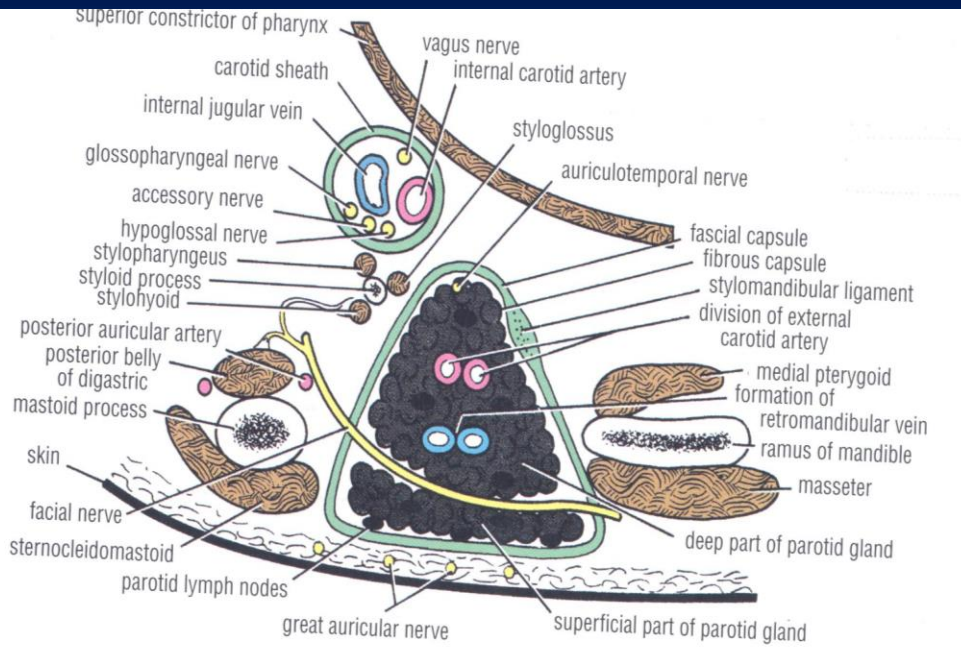


Structures which enter or leave the gland



- **Upper end : enter :** superficial temporal vein. **Leave :** 1-superficial temporal artery. 2-auriculotemporal N. 3-temporal branch of facial N.
- **Lower end : leave :** 1-cervical branch of facial N. 2-retromandibular (posterior facial) vein & its 2 division.
- **Posteromedial surface : enter :** 1-external carotid artery. 2-facial N.
- **Anteromedial surface : leave :** maxillary artery. **enter :** maxillary vein.
- **Anterior border : leave :** 1-zygomatic branch of facial N. 2-buccal branch of facial N. 3-mandibular branch of facial N. 4-parotid duct. 5- transverse facial artery (branch of ext. carotid artery)

Relations of the parotid gland



Superficial R.(lateral R.) :

Skin, + **superficial fascia** containing platysma & great auricular N. + **deep fascia** (parotid fascial capsule) + **parotid L.Ns.**

Superior R. : ext.auditory meatus & posterior surface of temporo-mandibular joint.

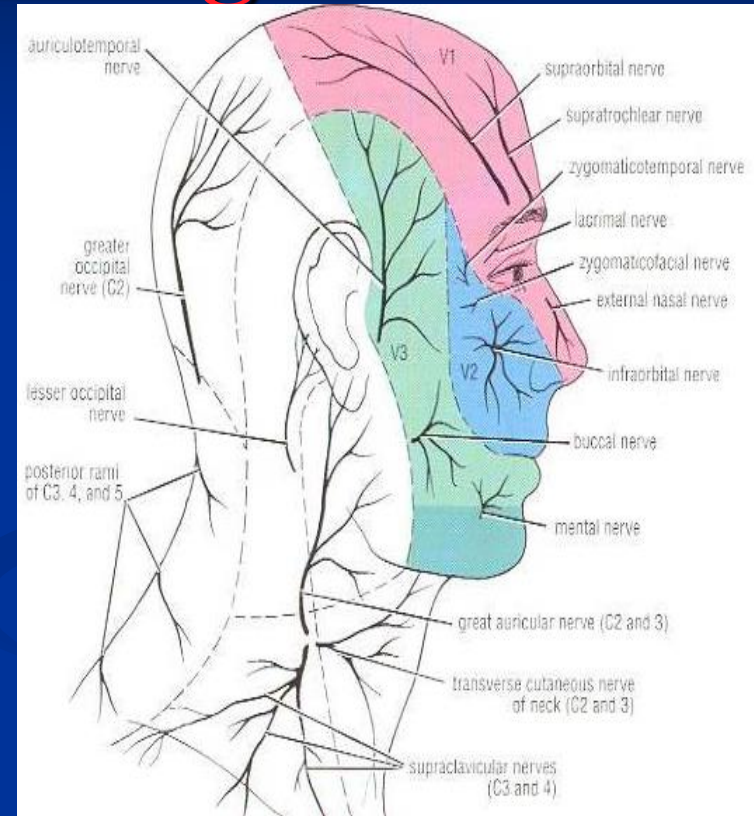
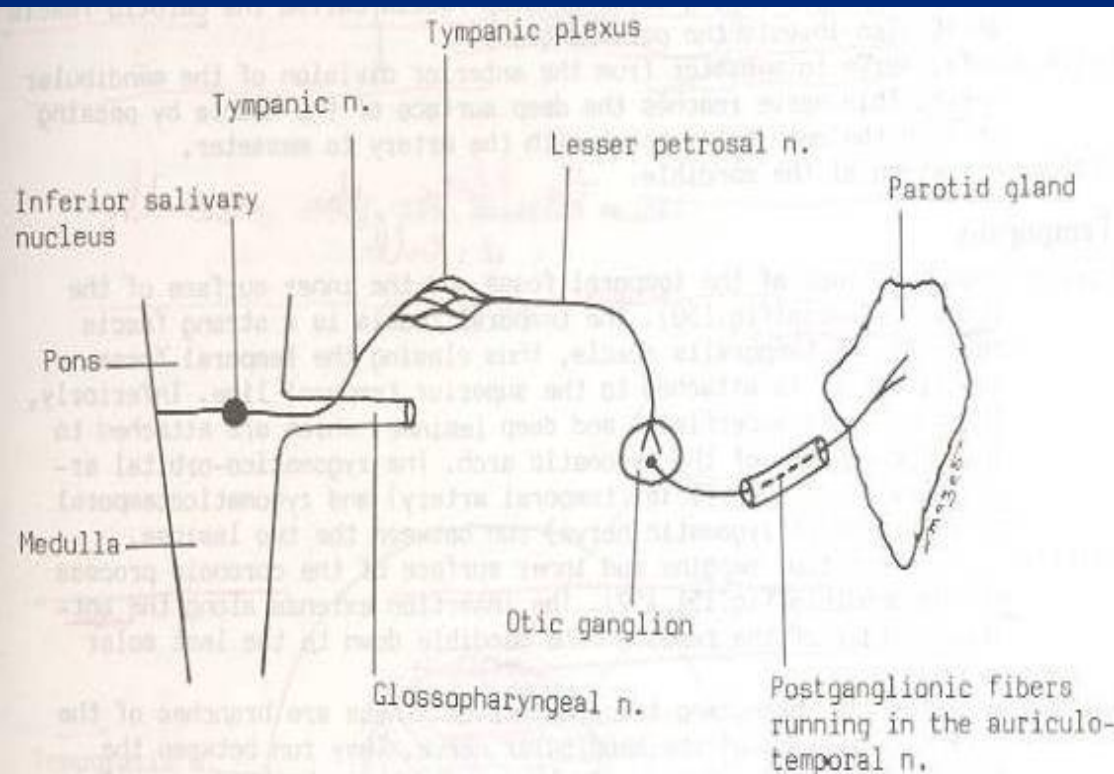
Antero-medial R. : ramus of mandible + temporomandibular j.+ medial pterygoid + masseter.

Postero-medial R.: mastoid process & attached Ms. + **styloid process** & its attached Ms. + **carotid sheath** & its contents + **Facial N.** enters gland from its postero-medial surface + **external carotid artery** grooves gland at its posteromedial surface, then passes inside it.

Blood Supply, lymph drainage, and Nerve supply of parotid gland

- **Blood supply: external carotid A. + its 2-terminal branches (maxillary Ar. + superficial temporal Ar.) & The 2-veins (maxillary & superficial temporal veins) drain into the retromandibular vein.**
- **Lymph D.: parotid L. Ns., which finally drain into deep C.L.Ns.**
- **N.supply: 1-Parasymp.secretomotor Fs.:**
Inferior salivary nucleus of 9th C.N. in M.O.—**Via** its Tympanic branch to form tympanic plexus in middle ear, and then **Via** Lesser petrosal N.(preganglionic fibres) — into **OTIC ganglion.**
Postgang. Secretomotor parasymp. Fs. : from otic ganglion **Via** auriculotemporal .N. to supply parotid gland.
- 2-Sympath.Fs. :** plexus of nerves around external carotid artery.
- 3-Sensory Fs. :** auriculotemporal N. (branch of mandibular N.), ascends from upper end of parotid gland to supply skin of scalp above auricle + great auricular N.(C2,3)

Parasympathetic secretomotor + Sensory Supply of parotid gland :



➤ **Otic ganglion** is a small parasympathetic ganglion that is functionally associated with glossopharyngeal N. **it is located** in the infratemporal fossa, just below foramen ovale, medial to mandibular N.

-Auriculo-temporal N. is a branch of post. division of mandibular N. + Great auricular N. (C2,3).

Clinical notes:

1-parotid gland infection---Mumps

Gland becomes swollen, painful because fascial capsule derived from investing layer of deep cervical fascia is strong and limits the swelling of gland.

2-Frey's Syndrome :

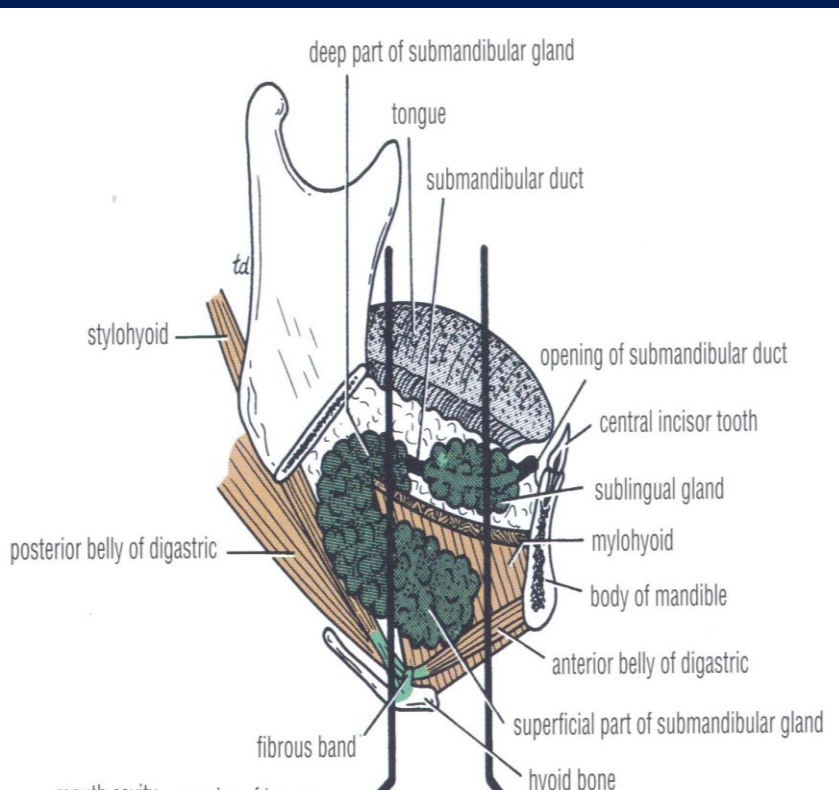
-it is an interesting complication that sometimes occurs after penetrating wounds of parotid gland.

-when patient eats, beads of perspiration appear on the skin of parotid.

-It is caused by damage to **auriculotemporal & great auricular nerves.**

-During healing, parasymp.secretory Fs. in auriculotemporal N. grow out and join distal end of great auricular N.(C2,3) supplying skin over parotid. These fibres reach the sweat glands in skin of face so, there is sweating on skin covering parotid, instead of salivation during eating.

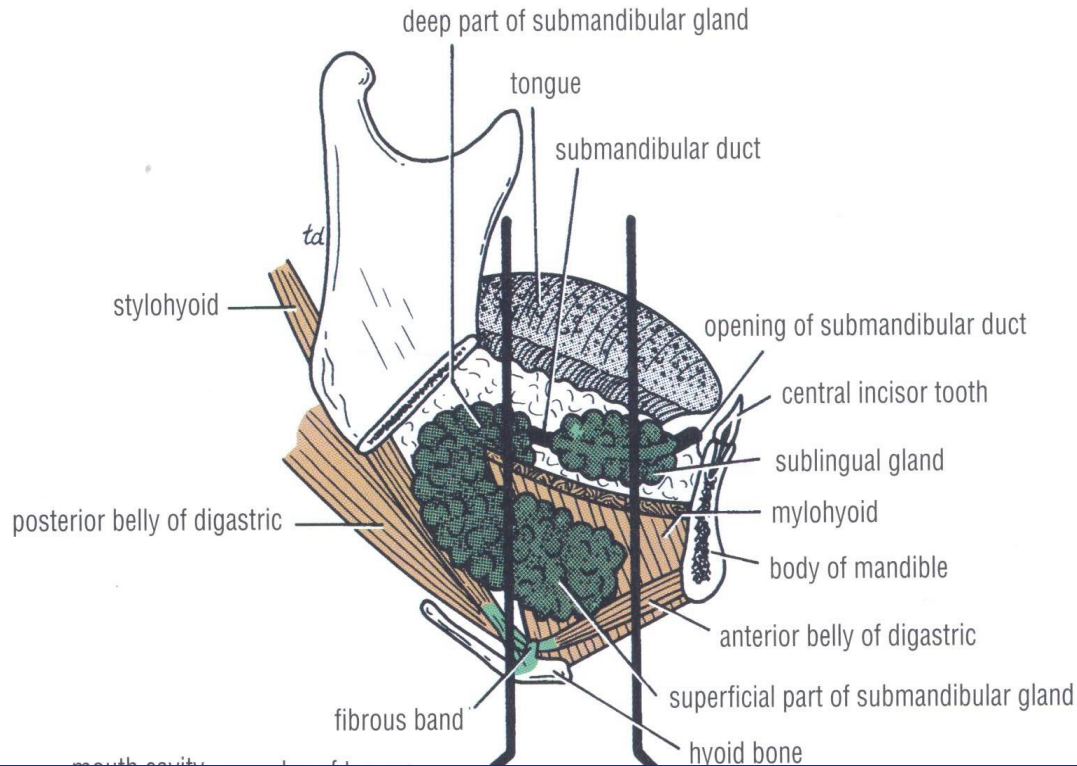
II. Submandibular salivary gland.



Lateral view of submandibular & sublingual glands.

- It is a lobulated mass, composed of serous & mucous acini.
- It is surrounded by C-T capsule + dense fascial capsule derived from investing layer of deep cervical fascia.
- It has a large superficial part & a small deep part.
- Its deep part is continuous with superficial part around posterior border of mylohyoid muscle.
- **Its superficial part** lies in digastric triangle between mylohyoid & body of mandible (superficial to mylohyoid).
- **Its small deep part** lies deep to mylohyoid and superficial to hyoglossus.

Relations of superficial part of Submandibular salivary gland.

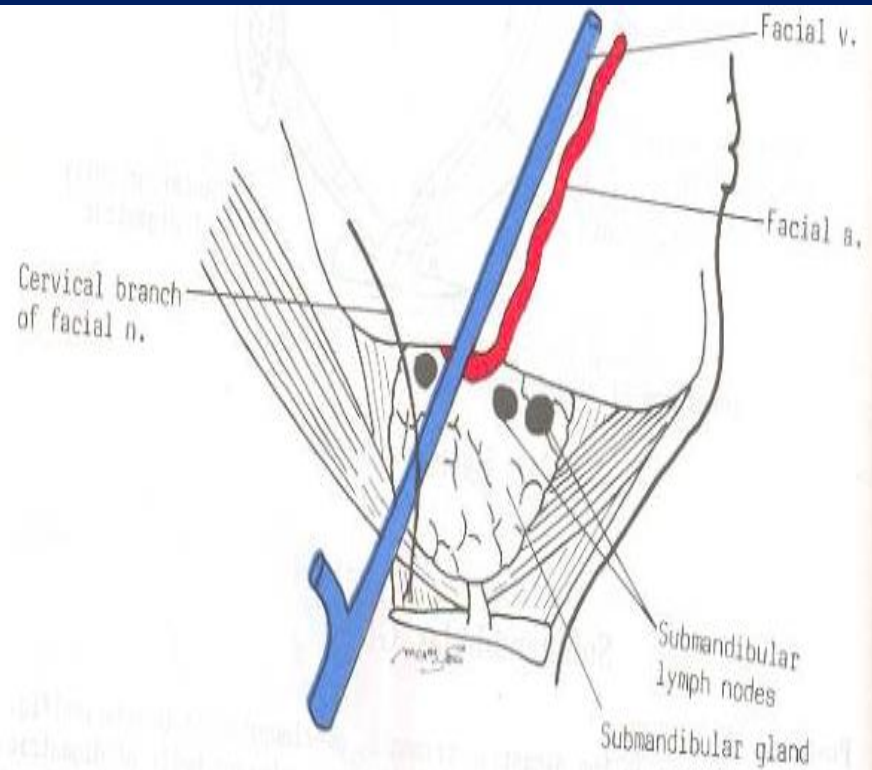


➤ **Anteriorly** : anterior belly of digastric

➤ **Posteriorly** : posterior belly of digastric + stylohyoid muscle.

➤ **Medially (deep)** : **-mylohyoid.**

Relations of superficial part of submandibular salivary gland.



➤ Laterally :

-it lies in contact with submandibular fossa on medial surface of mandible.

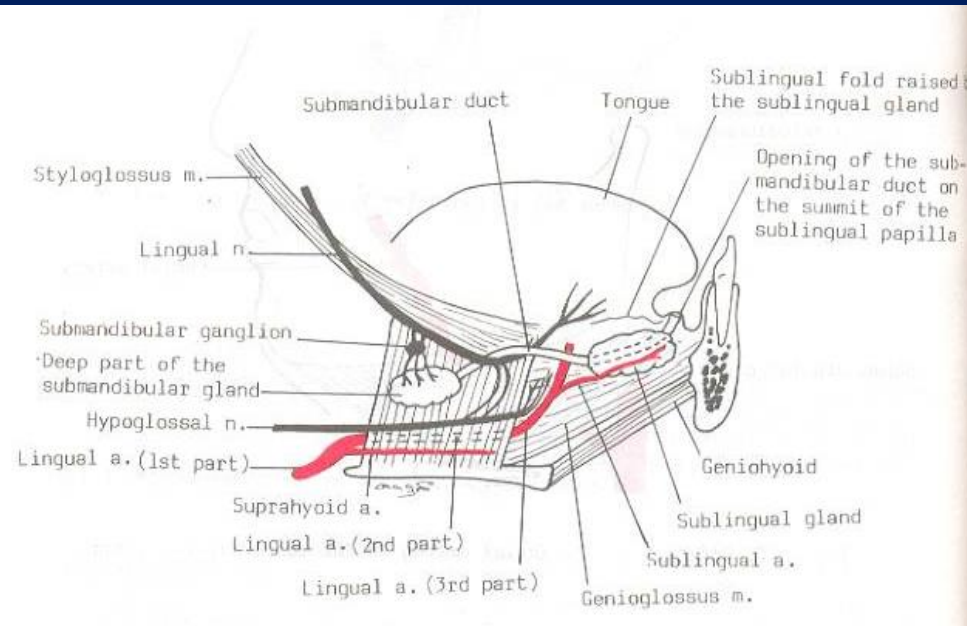
➤ Inferolaterally (superficial) :

-skin, superficial fascia, platysma & investing layer of deep cervical fascia + submandibular L.Ns.

-it is crossed by facial vein & cervical branch of facial nerve.

-facial artery ascends into digastric triangle, it deeply grooves posterior end of the gland, then passes between lateral surface of gland & the bone to reach base of mandible where it pierces deep fascia to ascend to face.

Relations of Deep part of submandibular gland.

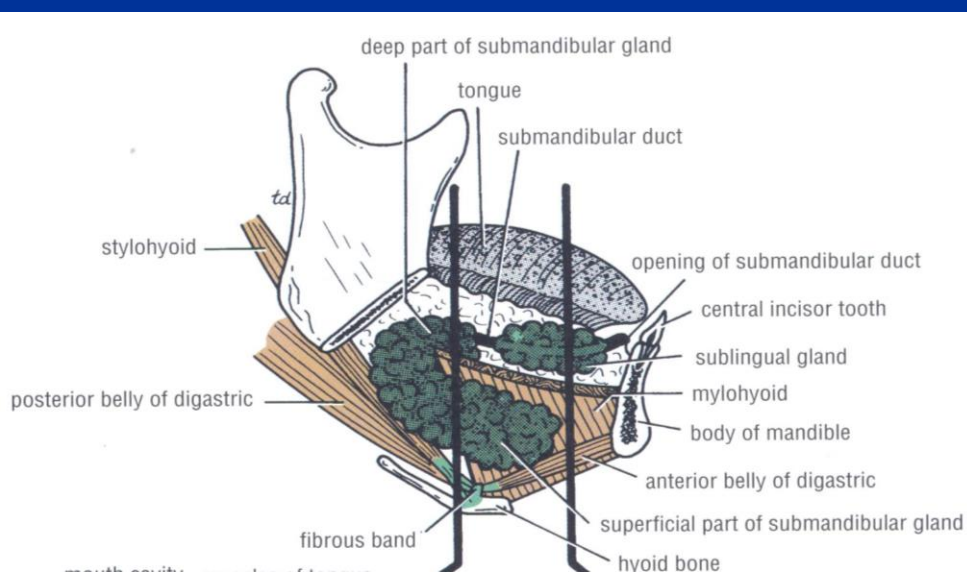


➤ **Medially (deep)** : hyoglossus & styloglossus.

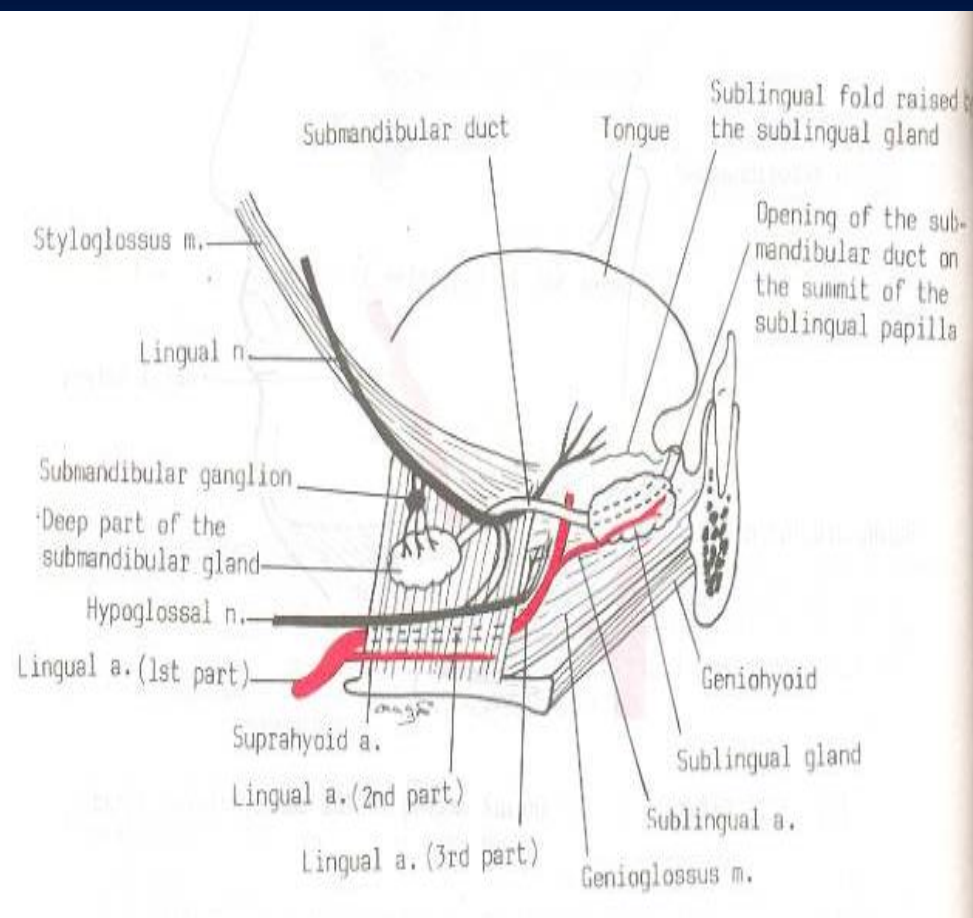
➤ **Laterally (superficial)** : mylohyoid & superficial part of gland.

➤ **Superiorly** : lingual N. & submandibular ganglion.

➤ **Inferiorly** : hypoglossal N.



Submandibular Duct

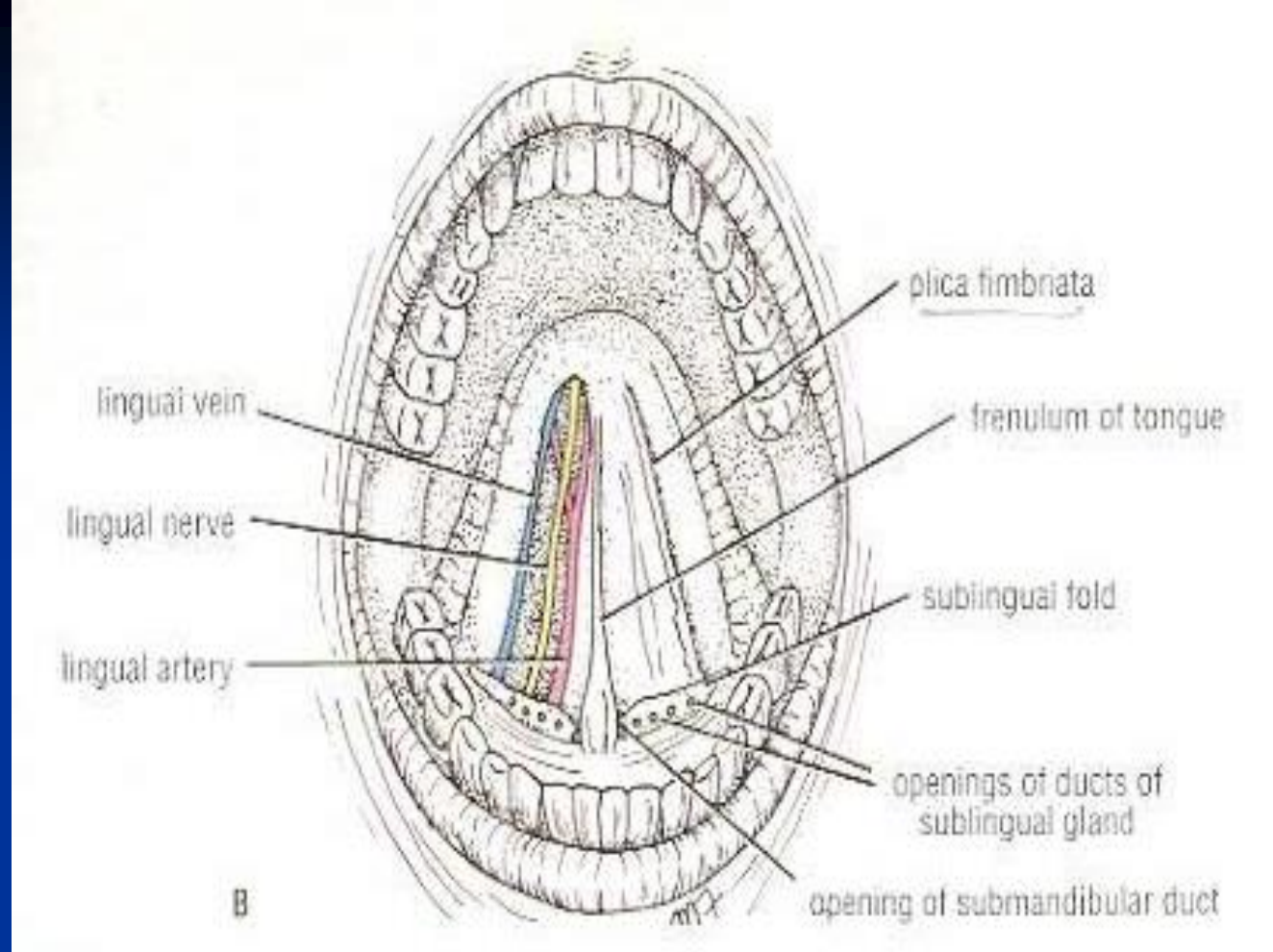


➤ It **emerges** from anterior end of its deep part.

➤ It **passes** beneath m.m. of floor of mouth.

➤ It is **crossed** by lingual N., then lies between sublingual gland & genioglossus muscle.

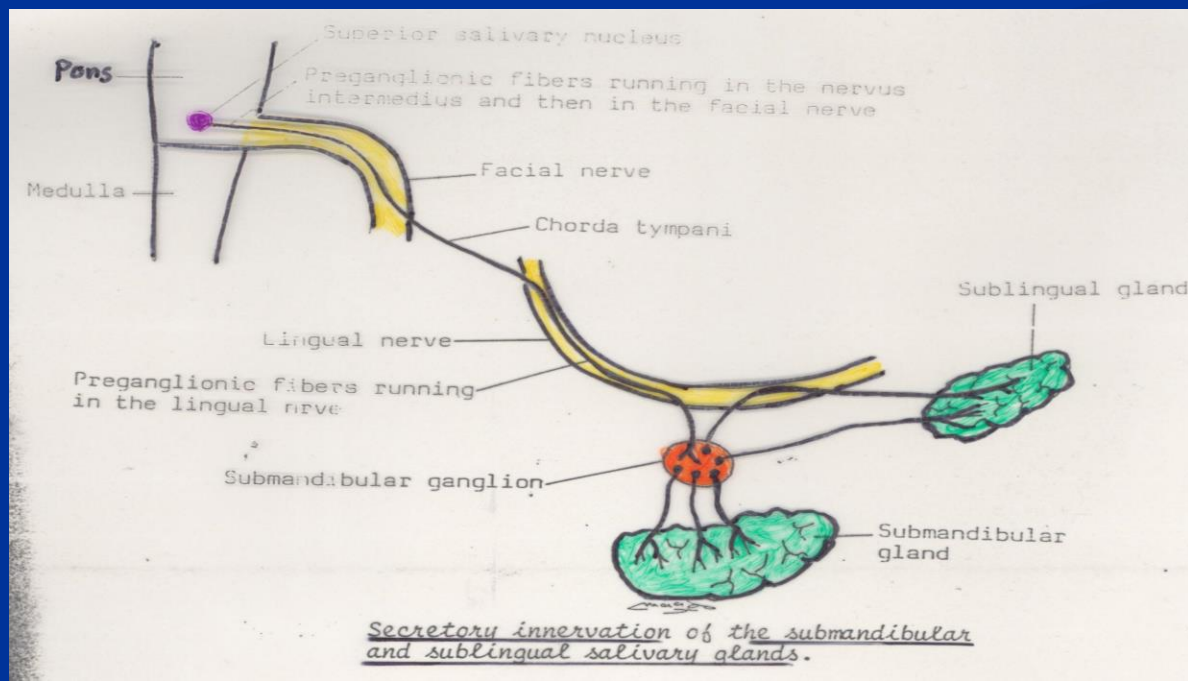
➤ It **opens** into floor of mouth at the side of frenulum of tongue.



➤ **Note, frenulum of the tongue in midline** = it is a fold of m.m. connects undersurface of tongue to the floor of mouth.

➤ **Note, opening of submandibular duct** into floor of mouth at the side of frenulum of tongue.

- **Bl. Supply** : branches of **Facial & lingual arteries**.
- **Lymph drainage** : submandibular + deep cervical L.N.
- **Nerve supply** : **1-Parasym.secretomotor Fs.** ∴ from sup.salivary.N.of **7th C.N. (Facial N.)** via **chorda tympani N.** to join **lingual N.** and pass into **submandibular ganglion**, then postganglionic **parasymp. secretory Fs.** From ganglion **via lingual N.** into gland.
- **2-Symp.Fs.** : from **plexus of nerves around Facial +Lingual arteries**.
- **3-Sensory** : lingual N.



Clinical Notes

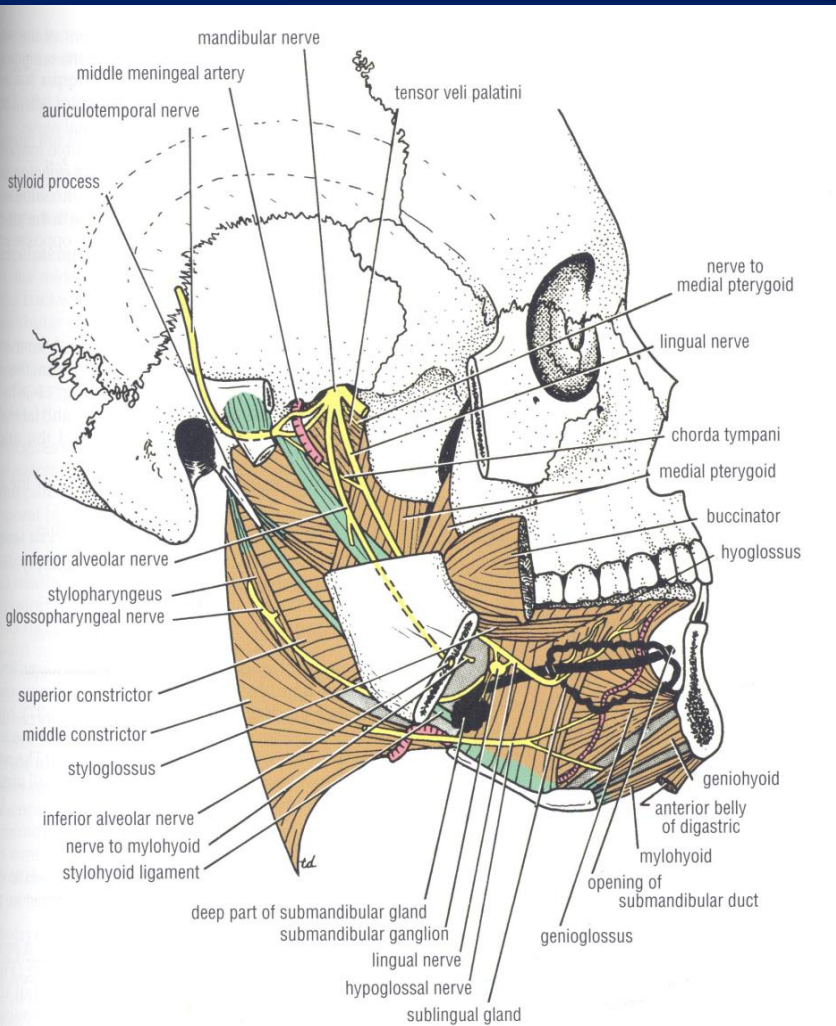
- **Calculus formation** : its common site is the submandibular gland : tense swelling below the body of the mandible, which is greatest during a meal and is reduced in size or absent between meals (diagnostic of the case).

Clinically: by examination of floor of mouth, reveals **absence of ejection of saliva** from the orifice of duct.+ **stone can be palpated in the duct**, which lies below m.m. of the floor of mouth.

Clinical Notes :

- **Enlargement of Submandibular Lymph Nodes** are commonly due to :
 - 1-Pathologic condition** of scalp, face, maxillary sinus, or mouth cavity.
 - 2-Acute infection of teeth** (most common cause of painful enlargement these nodes)

III. Sublingual salivary gl.

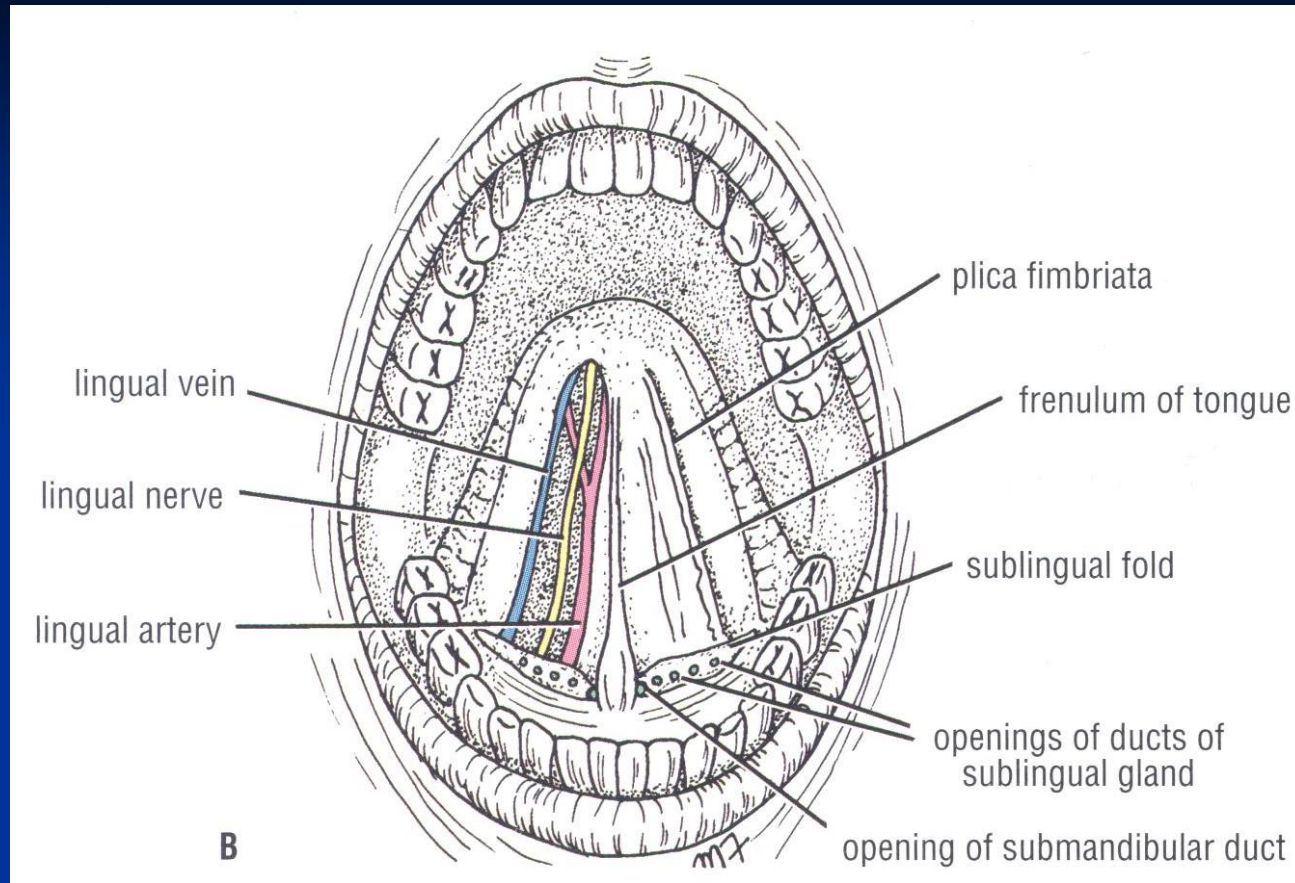


➤ It is the **smallest** of the three main salivary glands.

➤ It **contains** both serous & mucous acini.

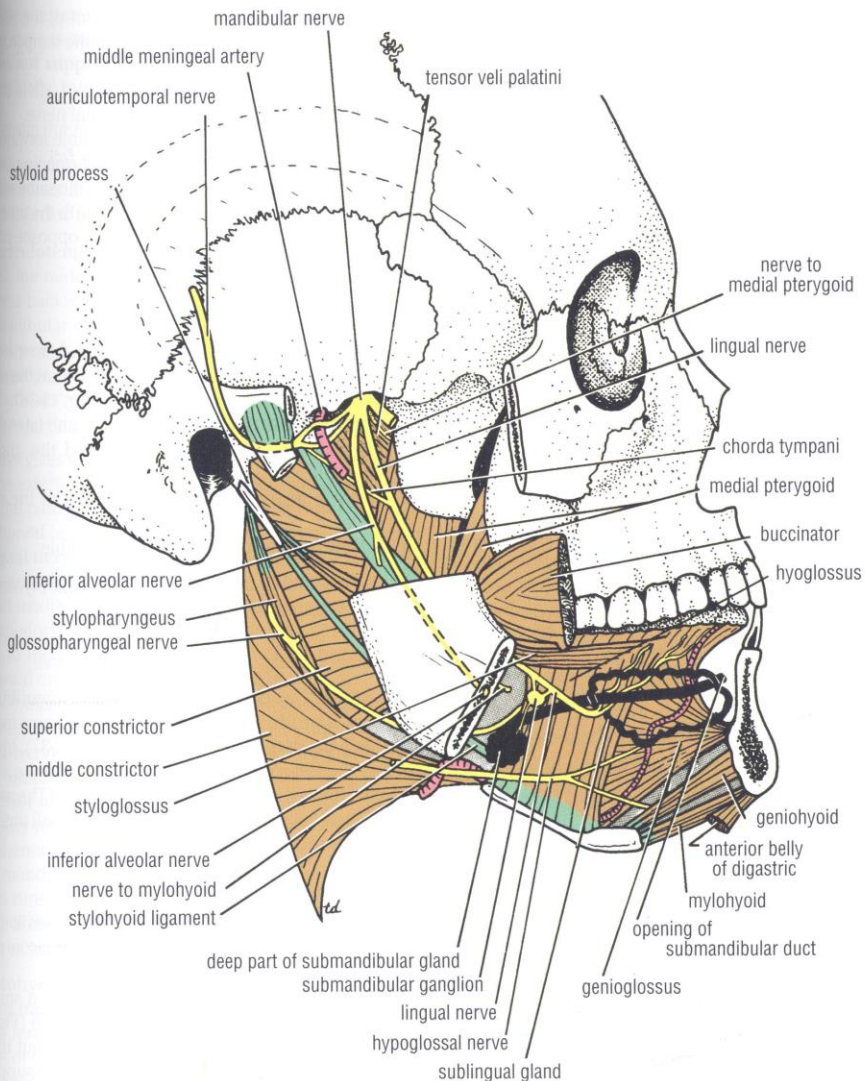
➤ It **lies** beneath m.m. of floor of mouth, within sublingual fold close to midline.

➤ **Sublingual ducts** : The gland opens by numerous small ducts into floor of mouth on the summit of sublingual fold.



➤ Note, openings of sublingual ducts 8-20 in number, they open into the floor of mouth on the summit of sublingual fold.

Relations of Sublingual salivary gland



➤ **Posteriorly** : deep part of submandibular gland.

➤ **Medially (deep)** : genioglossus + lingual N. + submandibular duct.

➤ **Laterally (superficial)** : sublingual fossa of medial surface of mandible.

➤ **Superiorly** : m.m. of floor of mouth, forming sublingual fold.

➤ **Inferiorly** : it is supported by mylohyoid muscle.

❖ **Blood supply, lymph drainage, -----**

As the submandibular gland.

❖ **Nerve supply :**

1- Parasymp.secretomotor Fs.—as submand.gl. and postganglionic Fs.pass to gland **via the Lingual N.**

2- Postganglionic Sympathetic F.---as submand.gland.

